in proportion to the like linear dimensions of the surfaces than in proportion to the surfaces. He has also shown that for equal surfaces isodiametric surfaces give least evaporation, and that the greater the deviation from the isodiametric the greater the evaporation. These facts are related to the water vapor cap over the evaporating surfaces, a thing to which RENNER gives great importance in the absence of air currents. He concludes that the deviation from the linear dimension law, under conditions cited in the first sentence, is in large part due to convection currents set up by the moist air over the evaporating surface being less dense than the surrounding dry air. In the present work,[13] by means of wet filters and water surfaces, RENNER studied in great detail the effect of shape, size, position, and proximity of evaporating surfaces in both still and moving air. Later he expects to carry these studies over to leaves, where the part played by internal regulation can also be determined.—WILLIAM CROCKER.

**Theories of heredity.**—In a discussion of two theories of heredity, that the nucleus is and that it is not the sole bearer of hereditary qualities, LUNDEGÅRD[14] devotes most of his space to a study of the literature, but also describes the various constituents of the cell in root tips of *Vicia Faba*. In the first part of the paper he comes to the conclusion that the nucleus cannot be the sole bearer of hereditary characters, but that extra-nuclear structures must be considered. To the reviewer, the arguments do not seem conclusive. The second part deals with the structures variously known as mitochondria, chondriomitria, chondriosomes, etc., and with plastids and other bodies and substances found in cells. He believes that the mitochondria do not come from the nucleus, and that they are not bearers of hereditary qualities. Here again the reviewer is not convinced and, in the present state of the subject, is inclined to think that at least some of the bodies known as mitochondria are of nuclear origin. Plastids also are considered, and the view of SCHIMPER and others, that the plastid is a permanent organ of the cell, is upheld.—CHARLES J. CHAMBERLAIN.

**Heterochromosomes.**—That there is a differentiation among chromosomes has been recognized for some time by zoologists, but it is only more recently that botanists have turned their attention to the subject. In the wild mulberry (*Morus indica*) TAHARA[15] finds, in early stages of prophase in sporophyte nuclei, paired chromatin masses which may be called pronuclei, and even at

[13] RENNER, O., Zur Physik der Transpiration. Ber. Deutsch. Bot. Gesells. **29**: 125–132. 1911.

[14] LUNDEGÅRD, HENRIK, Ein Beitrag zur Kritik zweier Vererbungshypothesen. Ueber Protoplasmastrukturen in den Wurzelmeristemzellen von *Vicia Faba*. Jahrb. Wiss. Bot. **48**: 285–378. *pls. 6–8*. 1910.

[15] TAHARA, MASATO, Ueber die Kernteilung bei *Morus*. Bot. Mag. Tokyo **24**: 281–289. *pl. 9*. 1910.